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supervisors elected by subdistricts of the township; and the authority of the township and district officers tended to increase. In 1860 the county judge was replaced by the more decentralized county board of township supervisors; but ten years later the number of supervisors on each county board was reduced to a maximum of seven, which practically revived the earlier system of county commissioners. Since 1870 the local administration of roads has been divided between county and township authorities, a larger share of the work being done under the county officers. The later chapters discuss the good roads movement and the work of the State Highway Commission, established in 1904. While the changes in administrative organization are thus considered at length, the monograph has not attempted a detailed study of the concrete results in the construction and management of the road system. But the author does not hesitate to indicate his opinion that a greater degree of centralized administration is more favorable to a high degree of efficiency.

In the more distinctly economic problem of taxation, the history of road legislation in Iowa discloses little that is novel or peculiar to that state. The main line of development has been from the primitive system of labor taxes, the introduction and more extended use of property taxes levied and collected in money, and more recently the use of special taxes on motor vehicles.

Chapter 10 of the larger monograph presents a comparative study of road legislation in the United States, followed by an appendix summarizing the principal provisions of the road laws of each state. The condensed monograph concludes with a brief discussion of standards of road legislation. Here Dr. Brindley expresses his conclusions in favor of the township as the primary unit of local road administration for secondary roads, but favors an increase in the powers of the county authorities and the State Highway Commission.

JOHN A. FAIRLIE.

University of Illinois.

Waterways Versus Railways. By HAROLD G. MOULTON. Hart, Schaffner & Marx Prize Essays in Economics, XIII. (Boston: Houghton Mifflin Company. 1912. Pp. 468. \$2.00.)

This substantial volume of well authenticated material and interesting deductions is the outgrowth of the writer's desire to

investigate the traffic possibilities of certain proposed water routes in the United States. The study led to an examination of the relative expenses of rail and water carriage in Europe, the results of which constitute the major theme and chief value of the book. As an economic survey of canal and river transport in England, Germany, France, Belgium, and Holland, the volume is without equal.

Mr. Moulton finds that, excepting the Manchester and Kiel ship canals, the Rhine and Seine rivers, a few coal-carrying canals in France, and the larger waterways of the Netherlands, the water-borne traffic of Europe fails to command sufficient revenue to pay anything towards the maintenance and interest costs of the waterways. These costs now constitute a net loss to private investors in England and a drain on the public treasuries of Germany, France, and Belgium. Furthermore, the freight rates by water, which have provided no more than a minimum of operating expenses in the past, are not low enough to hold the business against railways although rail companies accept the traffic only under highly profitable tariffs.

After sixteen years of operation, the Manchester ship canal, the pride of England's waterways, had paid no dividends, was \$34,950 behind in its interest account and afforded little hope of improved financial condition. Prussia's annual canal deficit in 1905 was \$13,489,777, a virtual subsidy of \$3,523 per mile of waterway amounting to 7.8 per cent of the estimated cost of construction. Maintenance of navigation on the rivers of Germany averages an annual cost of \$2,000 per mile, and, despite the favorable location and flowage of German streams and the assumption of maintenance costs by the government, river transport is declining relatively.

Water traffic has developed in Germany only through the aid of government policy which compels the taxpayers to contribute an enormous sum for the support of water transportation. The railways possess decided advantages over the waterways. If the waterway subsidies were discontinued, and if attention were concentrated upon railway development, the cost of transporting the traffic of Germany might be substantially reduced (p. 254).

In France the annual interest loss on waterway investments for 1907 was \$14,400,000, calculated at 4 per cent on cost. When the cost of maintenance carried by the government is added to interest, the total approximates \$19,000,000, amounting to an annual subsidy of \$2,500 per mile or 56 cents on each ton of

freight carried. To force traffic upon the waterways, the railways of France are required to maintain charges on certain classes of freight at a differential of 20 per cent or more above water rates. Although thus prevented from competing with the boat lines, the railway companies are said to contribute \$58,200,000 to the state each year and to earn for themselves a dividend of over 4 per cent on a liberal capitalization.

It is certain that all the present freight traffic of France could easily be handled by the existing railways. The French government is heavily taxing its citizens for the support of a great system of inland waterways which is almost, if not wholly, unnecessary. It is likewise not to be doubted that the result of this mistaken transportation policy is to keep railway freight rates at a much higher level in France than would otherwise be necessary (p. 290).

An examination of the nature of canal and river traffic taken the world over reveals only five varieties of commodities which appear to be adapted to conditions of inland water transportation, *i.e.*, coal, iron ore, stone and gravel, gross agricultural products, and lumber. Lumber is rapidly declining as a traffic factor, and under most favorable conditions agriculture contributes no more than about 13 per cent of the volume of traffic necessary to justify operation.

Finally, the author concludes that physical and industrial conditions are much more advantageous to water transportation in Europe than in the United States, that all existing and potential traffic in the United States can be adequately handled by the railways and more cheaply than by water carriers, that New York's expenditure of over \$100,000,000 in the improvement of the Erie Canal is economically unjustified, and that the Lakes to the Gulf projects and the contemplated improvement of navigation on the Ohio River and other streams are sheer folly.

Mr. Moulton's manner of presentation is not quite up to the quality of his work in other respects. Occasional overemphasis and extreme deductions invite the charge of unfairness to the waterways. Repetition and discursive treatment consume many unnecessary pages. For example, on each of five pages (pp. 280, 284, 286, 289, 290) the reader is confronted with statements of identical substance concerning canal subsidies, restricted rail competition, and relative railway efficiency in France.

The percentage increases in ton mileage accredited, respectively, to the railways and waterways of Germany on page 173 should be 408 and 523 instead of 323 and 239 as printed.

Mr. Moulton's conclusions are primarily based upon the fact that waterways are not nor do they promise to become sufficiently productive of commercial revenue to defray costs of operation and maintenance and to return in addition the current rate of interest on the amount of the investment. Not all are agreed that public enterprise and private commercial undertakings should be placed in the same category in the matter of returns to capital or the earning of interest. If, as some believe, interest is a derivative of the subjective affinity of individuals for value, Mr. Moulton's reasoning touching the attitude of public policy toward waterway development is theoretically fallacious.

RALPH H. HESS.

University of Wisconsin.

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